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ABSTRACT

A pilot project tested and evaluated teleconferencing as a medium for training engineering teaching assistants in technical writing. The teleconference, which linked 15 participants in the engineering departments and writing centers of the University of South Carolina and Ohio State University, also included a training session on the use of genre analysis to teach engineering students how to write abstracts. Preconference planning procedures included testing software, noting equipment limitations, defining program topic and structure, and promoting participation. The teleconference itself was comprised of segments such as an introduction, a free writing exercise and discussion, and an abstracting exercise. While evaluation of the project acknowledged some of the difficulties encountered in planning, preparing and using the technology, the system was nonetheless judged to be a potentially valuable tool for economical and effective engineering education. Appended are illustrations of the storyboard used, a guide to the history and timeline of the project, copies of slides used, and the handout used for the abstracting portion of the program. (CH)

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ED 406 944

USING GENRE ANALYSIS TO TEACH WRITING IN ENGINEERING

REPORT ON A PILOT VIDEO-TELECONFERENCE FOR ENGINEERING TEACHING ASSISTANTS AND WRITING CENTER CONSULTANTS

March 28, 1997

Elisabeth M. Alford, Jep C. Jonson, Thomas G. Smith, and Kristin Walker

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Using Genre Analysis to Teach Writing in Engineering:

Report on a Pilot Video Teleconference for Engineering Teaching Assistants and Writing Center Consultants

EXECUTIVE SUMMARY

A pilot educational teleconference, held Thursday, February 27, 1997, linked representatives of the engineering departments and writing centers from the University of South Carolina and Ohio State University (OSU). The Writing Center Program of USC's Department of Electrical and Computer Engineering (ECE) planned and hosted the teleconference. The fifteen participants included writing center consultants from the English Department at OSU, an engineering faculty member from OSU, the director of the English Department Writing Center at USC, writing and technical consultants from the engineering writing centers at OSU and ECE, and engineering teaching assistants from ECE.

The pilot teleconference had two objectives: 1) to test and evaluate the teleconferencing medium for training engineering TAs in methods of teaching writing; and 2) to conduct a training session on the use of genre analysis to teach engineering students how to write abstracts. Planning and conducting the teleconference gave host and remote-site participants the opportunity to gain experience in using the videoconference technology for educational programs. Conducting effective videoconferences requires extensive and careful planning. However, the technology enables distant educational institutions to conduct interactive training programs for TAs that might otherwise be impossible due to travel expenses and time constraints.

Evaluation of the teleconference indicated that participants gained helpful information in the session and believed that the technology supported a climate of collaboration. Participants found two of the software features –document sharing and notepad sharing –especially effective in facilitating instruction and group discussion.

BACKGROUND

To facilitate collaboration and communication among participating institutions, the Gateway Coalition of Engineering Colleges provided videoconferencing equipment, software and ISDN lines to each member institution. The original system provided by Gateway consisted of Intel ProShare Conferencing software (Version 2.0), and Intel hardware (Intel ProShare Videoboard, and Intel ISDN interface.)

Because this system supports multipoint videoconferencing, application sharing, and collaborative editing of texts, it offers a new vehicle for conducting inter-institutional training sessions related to writing instruction. The multipoint videoconferencing system, which allows participants in different sites to look at and discuss features of a shared text in real time, has particular advantages for providing instruction to teaching assistants. Due to shortage of time and

resources, few engineering institutions have been able to provide teaching assistants more than minimal training in pedagogy. New videoconferencing technologies enable institutions to share resources and to offer onsite training to teaching assistants.

Learning to make effective use of the unique medium of videoconferencing requires planning, experimentation, practice, documentation of experience, and continuing assessment of results. To begin gaining such experience, the Electrical and Computer Engineering Department's Writing Center Program at the University of South Carolina and the Ohio State University College of Engineering conducted a pilot training session for engineering teaching assistants on February 27, 1997. The pilot teleconference had two objectives: 1) to test and evaluate the teleconferencing medium for training engineering TAs in methods of teaching writing; and 2) to conduct a training session on the use of genre analysis to teach engineering students how to write abstracts. This report describes the planning, production, and evaluation of that teleconference.

PRECONFERENCE PLANNING

Planning a videoteleconference requires attention not only to program content but also to the unique advantages and challenges of using teleconferencing media. Because desktop videoconferencing systems are relatively new, few guides are available to help users plan conferences to make best use of the technology. In planning its test of the Gateway Intel Videoconferencing system for TA training, the ECE Writing Center staff followed suggestions contained in a guide, *Effective Videoconferencing*[1], along with the user manual for ProShare Conferencing.

Planning the conference involved the following concerns and procedures:

Testing software operation and capabilities: To ensure a well executed conference, participants and support persons need practice in using the equipment and software. Hands-on experience enables users to determine how best to employ the technology to present program content. In order to gain experience in sharing applications, the host system and remote site must have identical software. Since the Gateway videoconferencing system in the OSU College of Engineering uses a software package not compatible with ProShare, the OSU participants arranged to use the ProShare Conferencing system located in the OSU Landscape Department. The system was tested on February 11, 1997. At that time, ECE and OSU participants practiced sharing the notepad, sharing applications, and operating their cameras.

In the February 11 session, applications such as MS Word ran at adequate speed when originated from OSU; however, the same programs were noticeably slower when originated from ECE. To correct this sluggishness, the ECE system was upgraded.

The original system featured an AMD 5x86/133mhz motherboard w/16MB RAM and a 540MB Seagate IDE HD. The upgraded system features a Pentium 133mhz w/32 MB and a 1.6GB EIDE HD. In a subsequent test following the upgrade, the system's operating speed was satisfactory.

Facilities Limitations: In the ECE Department, the Gateway teleconferencing equipment and ISDN lines were installed in a vacant office measuring 9 ½ x 14. A table and 9 chairs were moved into the room for the conference. The Gateway equipment used at OSU was located in a professor's office; this room was also quite small. Both locations limited the number of participants who could be involved. In fact, ECE was in the embarrassing position of not being able to accommodate several members of faculty and administration who had expressed interest in observing the conference. In

order to introduce more personnel to the advantages of teleconferencing, the conference space should be large enough to allow observers.

Planning Program Content and Structure: As with any educational event, planning a videoconference includes consideration of the audience's interests and background, development of goals, and creation of activities to achieve the desired learning objectives. In addition, effective use of the software and program time requires planning the methods of presentation, ways to display and share materials, room arrangement, use of camera and keyboard, and time allocation. Finally, to ensure that the videoconference promotes collaboration and discussion, planning must identify strategies to encourage full participation by audiences at remote sites.

All of these planning issues were used in developing a storyboard to guide and coordinate the production of the teleconference. (Appendix A: Storyboard.) This planning tool was essential for creating task lists, delineating responsibilities, establishing schedules and developing program materials and content. (Appendix B: Planning History/Timeline.) By visualizing the component elements of the teleconference, the storyboard served as a blueprint that facilitated task scheduling and coordination.

Program topic: Three criteria were used in selecting the topic of abstracts for the first teleconference: 1) it was a subject area in which the host staff had done substantive research; 2) it was applicable to the daily work of writing consultants in engineering; 3) it dealt with a textual element that was sufficiently limited so that it could be discussed in a one-hour session and demonstrated on a PC monitor.

Program structure: A principal objective in designing the program structure was to blend the preferred pedagogical styles of the audience with the unique requirements of the medium. Writing center approaches focus on interaction between consultant and writer, on small group discussions, on teaching principles of writing while learners are actively engaged in the writing process, and on enabling students to internalize criteria for assessing their own writing. To address this audience, the teleconference included a balance of theory and practice, with brief instructions or lectures followed by group discussion, informal writing, and analysis of sample texts. The program took full advantage of the software capabilities: 1) a sample report was loaded into MS Word and the highlighter pen was used to point out textual features; 2) PowerPoint slides were prepared to reinforce key points made by the speakers and to give remote participants a quick visual summary of discussion questions. (Appendix C: PowerPoint slides.)

Promoting participation: The principal advantage of video teleconferencing over videotaped presentations is, of course, the opportunity for collaboration and discussion among individuals at different locations. However, without careful planning, viewers at the remote site may feel detached from the proceedings and reluctant to engage in the conference activities. Several steps were taken to create an atmosphere of collaboration and to encourage participation by all the consultants. A discussion leader was designated for the remote site. Participants were sent invitations prior to the conference. They were also provided a copy of the storyboard, a handout on abstracts (Appendix D), and a copy of the sample abstract and lab reports discussed during the conference. In addition, several activities, such as a freewriting exercise and guided group discussions, elicited responses from each participant.

TELECONFERENCE

The video teleconference held on Thursday, February 27, lasted for an hour and focused on effective principles for teaching abstracts. The major segments of the teleconference were as follows:

Introductions: The teleconference opened with welcoming remarks by Elisabeth M. Alford, Director, ECE Writing Center, and with introductions of the participants from the University of South Carolina-ECE:

Stephanie Metts, ECE Writing Center technical consultant
Thomas G. Smith, ECE Writing Center writing consultant
William Bates, Engineering GTA, ECE
Robert Grabowski, Engineering GTA, ECE
Kristin Walker, Assistant Director, ECE Writing Center
Jep C. Jonson, ECE Writing Center writing consultant
Kristen Bearden, ECE Writing Center technical consultant
Jennie C. Ariail, Director, USC Writing Center (English Department)

Then, Professor Audeen Fentiman, College of Engineering, Ohio State University, introduced the OSU participants:

Raja Laifa, Technical Communications Resource Center writing consultant
Kitt Farrar, Technical Communications Resource Center writing consultant
Brian Clouse, Technical Communications Resource Center writing consultant
Paul Miller, English Department Writing Center/OSU faculty
Jaye Bausser, English Department Writing Center writing consultant

Purposes: Next, using PowerPoint, Dr. Alford presented the purposes of the teleconference: 1) to discuss principles of teaching abstracts, and 2) to evaluate the teleconferencing medium for collaborative learning of principles of teaching technical writing. She also outlined some procedural guidelines for using the Intel ProShare software to synchronize video boxes and briefly described how the various handouts would be used during the conference.

Freewriting Exercise and Discussion: A brief freewriting exercise was used to help the participants explore their ideas/impressions about abstracts and to establish a context for subsequent discussion. In explaining the exercise, ECE writing consultant Tom Smith used a list of questions, displayed on PowerPoint, that suggested areas for the participants' informal writing. Smith then led a discussion of the responses, asking participants to share their perspectives on abstracts and concerns about teaching them. During this discussion, the responses were typed and displayed on the Notepad so that both groups could see them.

Principles of Abstracts: Kris Walker gave an overview of the principles of abstracts as described in a handout used by the ECE Writing Center. She then asked participants to comment on these principles and their application to the types of abstracts participants were most familiar with.

Teaching the Abstract: Using a sample lab report, ECE Writing Center consultant Jep Jonson led an exercise that illustrated how the abstract can be used as a blueprint for the document that follows. Students can use the abstract to check the report's organization; they can also use the abstract as a recursive device to guide revision. In the sample report used for this exercise, participants noted that the abstract's organization did not match the report's. The two groups discussed how the student might revise the paper and/or abstract to more accurately match each other.

Summary: At the conclusion of the conference, the two groups discussed what they had learned in the session. The participants remarked that the session had contained new information about abstracts, especially the value of using the abstract as tool to check the report's organization and as a tool for revision.

Participants also commented on the videoconferencing technology. For the most part, they agreed that the equipment seemed to work fairly well, except for intermittent sound difficulties and limited camera visibility. The Ohio State participants wanted to see the USC group more clearly but couldn't enlarge the picture to a satisfactory size. Another difficulty was the fact that only one person could speak at a time. This limitation caused some awkwardness, since it was hard to tell when someone could speak without interrupting another person. On a positive note, both groups commented on how well writing comments on the screen worked; both groups were able to view the comments almost simultaneously.

EVALUATION

Ohio State's participants evaluated the conference both immediately following the session and later by email. Feedback has been positive. According to OSU Engineering Professor Audeen Fentiman, the conference not only provided valuable information but also gave positive reinforcement to the engineering writing center consultants, who rarely have the opportunity to discuss writing principles with other writing consultants. Professor Fentiman's summary of the evaluation session immediately following the telecast included the following comments:

> As you could see, we didn't have the most convenient location for the OSU people, but people still were quite enthusiastic. I don't think we could have learned much more in an hour or had a more effective exchange of ideas if we had all been in the same room. The format you selected, the presentations by people at USC, having handouts for the people at OSU, and recording the ideas on the notepad on the screen all helped to make the session successful. I especially liked the notepad. It seemed to me to be faster and more effective than writing on a flip chart or a board. People could see what was said so quickly that it reinforced the point without interrupting the flow of the conversation.[2]

In her summary, Professor Fentiman also commented that writing consultants in OSU's Technical Communications Resource Center welcomed the opportunity to talk with writing consultants in other settings. They were pleased to learn that writing consultants elsewhere, especially those trained in composition and rhetoric, were finding the same problems and approaching them in similar ways. The conference thus increased these writing consultants' confidence in their work.

Subsequent evaluations from OSU participants were also positive. For example, Paul Miller, OSU English Department and Writing Center, sent the following comments:

> Concerning the medium: Despite the technical problems, and the cramped office we had to use, I thought it was an informative session . . . It would be nice to have a camera that could zoom in on the person speaking. I liked the juxtaposition of the picture of the people with the view of the handouts. Writing down the main points during our discussion was also a useful way of consolidating the discussion.
>
> Concerning the presentation: The focus on abstracts seemed useful, and the discussion of the sample abstract went well . . . I'm curious as to how you might see the possibility of future

subjects interanimating with your treatment of abstracts. I was very impressed with the organization of the presentation. You managed to tread an optimal line between direction and spontaneity. [3]

Raja Laifa, writing consultant with the OSU Technical Communications Resource Center, likewise commented on the organization and content of the conference: "The content was very practical and adhered to issues that we face in technical writing." She emphasized the value of the cross-disciplinary discussion, noting that it brought out new points she had not encountered in her engineering background. Laifa also mentioned the effectiveness of using the notepad to document points made during the discussion. Although she noted a technical problem – the software did not allow either group to see each other clearly, Laifa nonetheless said that the group interaction was pleasant.[4]

SUMMARY AND RECOMMENDATIONS

As Sprey notes, "videoconferencing can be of great benefit . . . as a tool to enhance communications. It can reduce costs by eliminating some travel that would otherwise be needed . . . and make day-to-day communications easier." For the purposes of training teaching assistants, the Gateway videoconferencing technology makes it possible to provide instruction that would otherwise be impossible, since travel funds are seldom provided for TAs. However, as Spry points out, numerous barriers exist to widespread acceptance of the technology. Among the barriers are the newness and complexity of the hardware. Spry emphasizes the need for training to help users become comfortable in using the system: "Since engaging in videoconferencing is so radically different from anything users have experienced before, most users must be taught to plan, to prepare for, and to learn the basics about using the technology before they will productively use this new method of communication."[5]

The ECE/OSU pilot project demonstrates some of the intricacies of planning and preparing for a videoteleconference and some of the challenges in learning the basics of using the technology. In this project, the users had to teach themselves the basics. The pilot effort required considerable time due to the staff's lack of experience with the equipment, the lack of guides to planning and conducting teleconferences, and the shortage of opportunities to test the equipment with another site having identical software. Nonetheless, the effort was justified, as the pilot demonstrated that the videoconference system is potentially a valuable tool for economical and effective engineering education.

To encourage educators to make greater use of teleconferencing and to help potential users learn principles of planning and producing effective conferences, the authors recommend the following guidelines:

1. User manuals and basic production guides should be available to all groups or departments participating in teleconferences. Both the host institutions and coordinators of remote audiences need guides to learn to use the equipment effectively during conferences..

2. Educational institutions and organizations such as the Gateway Coalition should schedule training sessions to give future conference producers and leaders ample opportunities to practice using the equipment, to see demonstrations of the software's various capabilities and limitations, and to receive brief orientations to effective conference planning.

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3. Groups and individuals planning videoconferences should be encouraged to practice with the equipment and to determine through first-hand experience the system's capabilities, speed, and ease of operation.

4. To make practice sessions realistic, teleconference planners should find a remote site to practice with. The remote site must have identical software in order to permit application sharing. Practice sessions should involve testing all applications that will be used in the actual teleconference.

5. Videoconferencing facilities used for small group training and discussions should be large enough to accommodate the participants, technical support personnel, and observers.

6. Videoconference sponsors should allow ample time to involve the intended audiences in the planning for the conference. Unless the interests of audiences are included in the planning, the videoconference becomes a presentation rather than a collaborative learning activity.

7. Videoconference hosts/producers should allow ample time for testing equipment before the scheduled session. Troubleshooting even minor problems in the system can be time-consuming. Moreover, since few people have extensive experience with document conferencing, isolating the source or nature of any particular problem can take considerable time.

8. Videoconference hook-ups between participating institutions should be established at least 30 minutes before the scheduled conference. This advance hook-up allows the producers to make final adjustments in equipment and correct any minor problems resulting from setting up the room, moving equipment, etc.

As with any new technology, achieving optimum use will require a period of experimentation and iteration. The process of learning to use this particular new medium, however, can lead to new insights into the complexities of human communication. The teleconferencing system, for example, makes participants acutely aware of the need to take turns speaking and listening. It thus highlights the collaborative nature of dialogue and the dialogic nature of the knowledge-making process. The medium can also make visible the relationships between talk and text, between speaker and audiences, between writer and reader. Thus, learning to use this new technology can at the same time be a process of inquiry into the making of meaning through computer-aided interaction and collaboration. The possibilities for research and innovation are irresistible.

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Appendix A

STORY BOARD
USC/OSU TELECONFERENCE

Time	Topic/Content	Materials/Methods	Presenter/Script	Technical Support
3:30	Opening Credits	PowerPoint Welcome	KB: prepare: EA: write	KB: load into computer
3:35	Welcome and Introductions	PowerPoint ID – USC participants	EA: identify people and their roles	JCJ/KB: zoom camera
3:40	Introductions – OSU		AF/PM: identify people or call on people to give names and current assignment	OSU technical support: zoom on participants
3:45	Purposes of Teleconference • Evaluate teleconferencing medium for conferences on teaching technical writing and writing-to-learn in engineering • Discuss principles of teaching abstracts	PowerPoint – purposes	EA: comments AF : comments	OSU: reduce PowerPoint applications window – use as supplement to comments
3:47	Writing Exercise (Participants will spend about 5 minutes writing down their thoughts about abstracts – How do you use them in your own studies and research? What are the conventions in your field for abstracts? What process do you use for writing abstracts? How do you teach students how to write abstracts?	PowerPoint slide that gives overview of freewriting assignment	TGS: explains freewriting PM: elaborates as necessary for OSU	USC : KB prepare PPT; OSU: need paper and pens for writing

Appendix A

Time	Topic/Content	Materials/Methods	Presenter/Script	Technical Support
3:52	Discussion and Summary of Participants' perspectives on abstracts and concerns about teaching them	Key in comments on notepad or WORD Document Screen when people say them.	TGS: USC moderates and restates responses. PM at OSU adds comments as appropriate TGS responds/summarizes at end.	EA: keys in responses as TGS states them.
4:00	Principles of Abstracts • Abstracts in computer and electrical engineering	Handouts on Abstracts from IEEE/AIP/ECE Writing Center	KW: discusses principles and handouts	KB: load handout into MS Word. JCJ: Uses highlighter as KW talks.
4:05	Discussion of Abstracts in the Disciplines • Abstracts in other engineering fields	Discussion – OSU participants discuss abstracts in other disciplines + experience at OSU; OSU keys in comments as summarized by PM	AF/PM : Responsible for leading discussion.	OSU technical support : zoom in on speakers

4:10	Helping students understand abstracts • Concept of abstract as instrument for key word search • Concept of abstract as blueprint for reading document	Abstract and lab report on Word Screen, plus sample report provided to OSU participants	JCJ: explains how to present purpose and functions of abstracts to students; then explains processes of writing abstracts based on what students learn through close reading of abstracts	USC : KB highlight key points on Word screen as JCJ mentions them.
4:20	Summary: What We Learned Writing Exercise	PowerPoint slide that gives overview of freewriting assignment (Write down your ideas): • What we learned • How we learned it • How the teleconferencing medium helped/hindered our learning	EA: explains purpose of final exercise; AF elaborates for OSU audience EA: asks OSU for comments AF :asks USC for comments	USC/OSU technical support: zoom camera on speakers
4:30	Thanks and sign off	Closing remarks	PowerPoint sign off	KB prepare

Key for initials:
AF: Audeen Fentiman, College of Engineering, The Ohio State University
EA: Elisabeth M. Alford, ECE Writing Center, University of South Carolina-ECE
JCJ: Jep C. Jonson, ECE Writing Center, University of South Carolina-ECE
KB: Kristen Bearden, ECE Writing Center, University of South Carolina-ECE
KW: Kris Walker, ECE Writing Center, University of South Carolina-ECE
PM: Paul Miller, Department of English, The Ohio State University
TGS: Thomas G. Smith, ECE Writing Center, University of South Carolina-ECE

Appendix B

PLANNING HISTORY/TIMELINE
ECE/OSU Videoconference
November 1996 -

DATE	INSTITUTION/ INDIVIDUAL	ACTION
21 Nov	ECE	Initiated planning of teleconference at weekly Writing Center staff meeting Division of responsibilities Outline of initial expectations Development of tentative schedule (initially planned for early January)
4 Dec	ECE	E-mailed OSU (Audeen Fentiman) with planning questions/topic Technical questions – document sharing/software Conference Planning Issues: Audience: number and responsibilities Engineering TAs - Background, fields, teaching and paper-grading responsibilities Anticipated attendance. Content: Brief introduction to "genre" and "discourse conventions" Responding to student writing Other topics of interest to OSU? Coordination Optimum length – 45 minutes? Optimum time/date?
	ECE	Requested upgrade of teleconferencing hardware and documentation
10 Dec	OSU	Received response to 4 Dec email from Audeen Fentiman Audience Number of TAs who respond to student writing not known – faculty do most grading of written reports. Engineering students working in Writing Center and consultants in English Department Writing Center may be interested. Content Responding to student writing a good subject – of interest to faculty and TAs in lab courses at OSU Timing 45 minutes good length -corresponds to 48 minute class length If possible, schedule conference to correspond to a class period Date: Decide after week of 6 Jan (after class schedules firmed up)
13 Dec	Gateway/ECE	Received ProShare user manual from Gateway
2 Jan	OSU	Located Gateway videoconference system with ProShare for ECE/OSUconference (Jane Murphy's office)
17 Jan	OSU English Dept.	Confirmed interest in participating (Paul Miller, OSU English Department)
24 Jan	ECE	Emailed tentative agenda to Audeen Fentiman at OSU

Appendix B

27 Jan	ECE	Made site visit to Southeastern Manufacturing Technology Center to see demonstration of teleconferencing capabilities in a conference room configuration, which included two monitors, two cameras, large projection screen, and conference space. Tested video conferencing equipment. Practiced using audio and video; incompatible software prevented test of document sharing
11 Feb	ECE/OSU	Tested equipment and link between OSU (Jane Murphy's office) and 3A58, the designated Gateway teleconference room at ECE
20 Feb	ECE	Held teleconference planning meeting (USC Writing Center) Distributed detailed list of remaining tasks ("punch list") Divided responsibilities for tasks Sent storyboard to OSU
21 Feb	OSU	Sent list of OSU participants to ECE
24 Feb	ECE	Sent handouts to OSU Sample lab report Handout on abstracts and reports Evaluation form
25 Feb	ECE	Held teleconference dress rehearsal (USC) Moved temporary furniture and chairs into 3A58 (the room size, 9 ½ X 14, limited participation) Decorated room with wall banner to reduce glare. Conducted remote test of teleconference equipment
27 Feb	ECE/OSU	Conducted teleconference Established remote link 30 minutes prior to scheduled start Tested all shared applications on line and tested before conference start

Appendix C

Writing Centers in Engineering

February 27, 1997

Libby Alford, Dir. - ECE Writing Center
Stephanie Metts, Technical Consultant
Willie Bates, Engineering TA
Tom G. Smith, Writing Consultant
Bob Grabowski, Engineering TA
Kris Walker, Asst. Dir. - Writing Center
Jep Jonson, Writing Consultant
Kristen Bearden, Technical Consultant
Jennie Ariail, Director USC Writing Center

- **Evaluate teleconferencing technology for discussing the teaching of writing in Engineering**
- **Discuss principles of teaching abstracts**

- **Freewriting helps generate ideas**
- **Freewriting makes ideas visible**

- **What is the purpose of an abstract?**
- **What are some identifying features of abstracts?**
- **What difficulties do students have in writing abstracts?**
- **How do you teach abstracts?**

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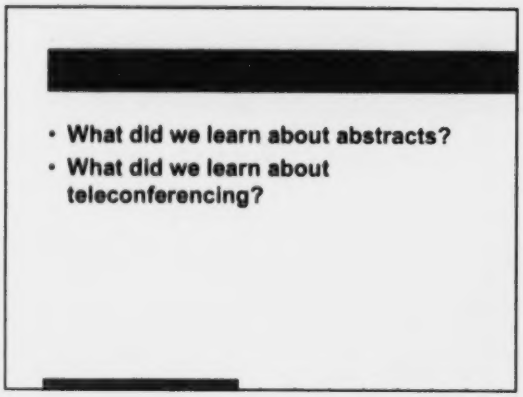
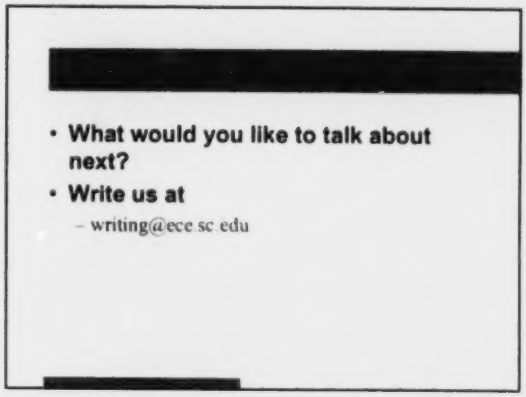
Appendix Ç





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Abstracts and Reports

"The abstract should be a clear, concise summary of the principal facts and conclusions of the paper, organized to reflect its pattern of emphasis. Remember that some readers may use the abstract in lieu of the parent document. The title and abstract together will often be used as a basis for indexing; hence they must mention all the subjects, major and minor, treated in the paper." AIP Style Manual, 1990

How are abstracts used?

The important thing to remember about how abstracts will be used is that they may be detached from the report they are abstracting. They may be published separately, they may be used in the library to index an article, they may be used for on-line searches. There are two primary users for abstracts: prospective readers and library indexers/cataloguers. The abstract, therefore, doesn't merely determine whether a reader will want to read the whole report; it will determine whether a reader searching for information on the subject will even see the report in the first place. Abstracts, therefore, must be a reliable guide to both the **content** and the **organization** of the report itself.

What are the different kinds of abstracts?

There are two basic types of abstracts: descriptive and informative. Although the names may change – the style manual of the Council of Biology Editors, for example, calls the descriptive abstract an "indicative" abstract –the principle is the same. A descriptive abstract simply describes the contents of the report, and "is almost an expanded **table of contents** in sentence form." It does not give results, conclusions, or recommendations, which distinguishes it from the informative abstract. A descriptive abstract is useful for reports that summarize other reports, for long reports, and for reports of a wide scope – that is, for reports that present large amounts of information rather than analyze specific data.

Reports that emphasize analysis should have informative abstracts, including results, conclusions, and recommendations. Almost all lab reports fall under this category.

What information goes into an abstract?

All abstracts, whether descriptive or informative, contain some elements in common. They all must describe the **purpose** and **scope** of the **report** (it is good to remember that an abstract is a report on a report, rather than a report on the lab experiment). Additionally, all abstracts must describe the **methods** used to obtain the information.

Because of the ways abstracts are used, they must focus very precisely on the most important ideas and information to be found in the report. Since libraries will use abstracts to catalogue a report, one good way to think of the content of the abstract is to consider it as a collection of **key-word searches**. If a writer were conducting a key-word search on the subject of the report, what terms would be most useful in describing the information the report contains?

How should abstracts be organized?

In addition to reflecting the content of the report, an abstract should also indicate its organization – how the report is put together. This will allow a prospective reader to know not only what information a report contains but also where in the report to look for it. As noted above, a descriptive abstract is virtually a table of contents for the report, expanded and put into complete sentences. The IEEE guide for processing technical papers goes so far as to describe the abstract as "a concise, *one-paragraph* collection of statements that describes the most significant ideas, procedures, and/or results of the paper," implying that writing the abstract is more or less a cut-and-paste job of gathering together the topic sentences from each section of the report in a detachable paragraph.

A reader should be able to understand, from the abstract, the sequence of information contained in the report. To approach this aspect of abstracts, compare the structure of an abstract with the structure of the report. If the main ideas of the report are not addressed in the abstract, and in the same order as in the report, which scheme of organization is more effective?